

FELSTROM et al
Appl. No. 09/588,629
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-21 (canceled).

22. (previously presented) A speech recognition system, comprising:

a spectral distance calculator including;

a calculator for performing a spectral distance calculation comparing an input spectrum of an input signal in the presence of a first known noise signal used to perform a function unrelated to speech recognition and a reference spectrum;

a memory for pre-storing one or more noise spectrums of one or more known noise signals including the first known noise signal; and

masking circuitry for masking the spectral distance between the input spectrum and the reference spectrum using the pre-stored noise spectrum of the first known noise signal, and

a selector for selecting a reference spectrum minimizing a spectral distance between the input spectrum and the reference spectrum.

23. (previously presented) A speech recognition system according to claim 22, wherein the calculator is configured to assign the spectral distance between the input spectrum and the reference spectrum a zero value for each frequency of the input spectra which is due to noise.

24. (previously presented) A speech recognition system according to claim 22, wherein the noise has a lower level than a level of the input spectrum.

25. (previously presented) A speech recognition system according to claim 22, wherein the spectral distance calculation includes calculating the following expression for spectral distance D_n :

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$$D_n = \sum_i A_i |R_n(f_i) - S_n(f_i)|,$$

where $R_n(f_i)$ is the reference spectrum, $S_n(f_i)$ is the input signal spectrum, and A_i is equal to zero if a frequency f_i of the input signal is due to a known noise and A_i is unity if no noise is present at the frequency f_i .

26. (previously presented) A speech recognition system according to claim 22, wherein the spectral distance is the sum of the spectral distance calculations for a number of samples discerning the reference spectra from each other.

27. (previously presented) A mobile telephone including the speech recognition system according to claim 22, comprising:

call answering circuitry operatively connected to the speech recognition system and responsive to one or more speech answering commands each forming an input spectrum.

28. (previously presented) A mobile telephone according to claim 27, wherein the call answering circuitry is responsive to an accept call command for accepting a call.

29. (previously presented) A mobile telephone according to claim 27, wherein the call answering circuitry is responsive to a reject call command for rejecting a call.

30. (previously presented) A mobile telephone according to claim 27, wherein the call answering circuitry is responsive to a forward call command for forwarding a call.

31. (previously presented) The speech recognition system in claim 22, wherein the first known noise signal is a periodic signal with a repeating pattern used to indicate a message.

32. (previously presented) The speech recognition system in claim 22, wherein the first known noise signal is a ring signal used to indicate a message.

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33. (previously presented) The speech recognition system in claim 22, wherein the first known noise signal is a melody or a buzzer signal used to indicate a message.

34. (previously presented) The speech recognition system in claim 22, wherein the first known noise signal is a signal output from a speaker.

35. (previously presented). The speech recognition system in claim 22, wherein the function unrelated to speech recognition is to drive a speaker.

36. (previously presented) A speech recognition method, comprising:
comparing an input spectrum of an input signal in the presence of a first known noise signal used to perform a function unrelated to speech recognition and a reference spectrum to obtain a spectral distance;

pre-storing one or more noise spectrums of one or more known noise signals including the first known noise signal;

masking the spectral distance between the input spectrum and the reference spectrum using the pre-stored noise spectrum of the first known noise signal; and

selecting a reference spectrum minimizing a spectral distance between the input spectrum and the reference spectrum.

37. (previously presented) A speech recognition method according to claim 36, further comprising:

assigning the spectral distance between the input spectrum and the reference spectrum a zero value for each frequency of the input spectra which is due to noise.

38. (previously presented) A speech recognition method according to claim 36, wherein the noise has a lower level than a level of the input spectrum.

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39. (previously presented) A speech recognition method according to claim 36, further comprising:

calculating the following expression for spectral distance D_n :

$$D_n = \sum_i A_i |R_n(f_i) - S_n(f_i)|,$$

where $R_n(f_i)$ is the reference spectrum, $S_n(f_i)$ is the input signal spectrum, and A_i is equal to zero if a frequency f_i of the input signal is due to a known noise and A_i is unity if no noise is present at the frequency f_i .

40. (previously presented) A speech method according to claim 36, wherein the spectral distance is the sum of the spectral distance calculations for a number of samples discerning the reference spectra from each other.

41. (previously presented) The speech recognition method according to claim 36 associated with a telephone, further comprising:

detecting and recognizing one or more speech answering commands, each forming an input spectrum.

42. (previously presented) The speech recognition method according to claim 41, further comprising:

responding to an accept call command to accept a call to the telephone.

43. (previously presented) The speech recognition method according to claim 41, further comprising:

responding to a reject call command to reject a call to the telephone.

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44. (currently amended) The speech recognition method according to claim 41, further comprising:

responding to a forward ~~callee~~ command to forward a call to the telephone.

45. (previously presented) The speech recognition method according to claim 36, wherein the first known noise signal is a periodic signal with a repeating pattern.

46. (previously presented) The speech recognition method according to claim 36, wherein the first known noise signal is a ring signal used to indicate a message.

47. (previously presented) The speech recognition method according to claim 36, wherein the first known noise signal is a melody or a buzzer signal.

48. (previously presented) The speech recognition method according to claim 36, wherein the first known noise signal is a signal output from a speaker.

49. (previously presented) The speech recognition method according to claim 36, wherein the function unrelated to speech recognition is to drive a speaker.